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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,292	12/08/2003	Zia Hossain	ONS00478	2181

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EXAMINER	
NGUYEN, JOSEPH H	
ART UNIT	**PAPER NUMBER**
2815	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/729,292	HOSSAIN ET AL.	
	Examiner	Art Unit	
	Joseph Nguyen	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10,11,17,18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10,11,17,18 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims1-8, 10-11,17-18 and 20 are withdrawn in view of the newly discovered reference(s) to Eklund (US Patent 5,313,082). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 7-8, 10, 11, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (US 6,489,653) in view of Eklund.

Regarding claim 1, Watanabe et al. discloses on figure 8 a lateral FET structure comprising a body of semiconductor material 11 having a first conductivity type; a first well region 19' of a second conductivity type formed in the body of semiconductor material; a second well region 23 of the second conductivity type formed in the body of semiconductor material; a first drain contact region (where 28 meets 19') of the second conductivity type formed in a portion of the first well region; a second drain contact region 24 of the second conductivity type formed in a portion of the second well region; a first doped region 14 of the first conductivity type formed in another portion of the body

of semiconductor material adjacent to the first well region 19'; a first source region 16 of the second conductivity type formed in the first doped region; a gate structure 18 formed over the first major surface; a first conductive layer 30 coupled to the first source region 16 to form a source contact; a second conductive layer 28 formed over the body of semiconductor material and coupled to the first and second drain contact regions; and an interlayer dielectric layer 25 separating at least a portion of the first and second conductive layers 30, 29. Watanabe et al. does not disclose a second doped region of the first conductivity type formed in a portion of the first well adjacent to the first drain contact region. However, Eklund discloses on figure 1B a second doped region of the first conductivity type 27 formed in a portion of the first well region 26 adjacent to the first drain contact region 24. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Watanabe et al. by having a second doped region of the first conductivity type formed in a portion of the first well adjacent to the first drain contact region for the purpose of providing an improved resistance characteristic in a FET device as taught by Eklund (col. 2, lines 25-28).

Regarding claim 2, Watanabe et al. discloses on figure 8 the first doped region 14 surrounds the first well region 19'.

Regarding claim 3, Watanabe et al. discloses on figure 8 a second source region 16 formed in the body of semiconductor material (on the opposite side of well 19'), wherein the first conductive layer 30 is coupled to the second source region.

Regarding claim 4, Watanabe et al. discloses on figure 8 a third doped region 32 of the first conductivity type surrounding the second well region 23, and wherein the first and second doped regions 14, 32 are absent a fingertip region.

Regarding claim 7, Watanabe et al. discloses on figure 8 the first and second well regions 19', 23 are spaced apart.

Regarding claim 8, it is considered that well region 19' will include a pair of opposing rounded tips as it is formed using known diffusion processes. .

Regarding claim 10, Watanabe et al. discloses on figure 8 the first conductive layer 30 and second conductive layer 29 do not overlap.

Regarding claim 11, Watanabe et al. discloses on figure 8 a portion of the second conductive layer 28 is over a portion of the first well region 19' and separated from the first well 19' by a dielectric layer 21.

Regarding claim 17, Watanabe et al. discloses on figure 8 a method for forming a lateral FET device comprising the steps of providing a body 11 of semiconductor material having a first conductivity type; forming a plurality of drain regions 19' in the body of semiconductor material; forming a plurality of source regions 16 in the body of semiconductor material; forming a first conductive layer 29 on the body of semiconductor material and coupled to the plurality of drain regions; and forming a second conductive layer 30 on the body of semiconductor material and coupled to the plurality of source regions 16, wherein at least a portion of the second conductive layer is separated from a portion of the first conductive layer by a dielectric layer 25. Watanabe et al. does not disclose forming a first conductivity type doped region in at

least one of the plurality of well regions. However, Eklund discloses on figure 1B forming a first conductivity type doped region 27 in at least one of the plurality of well regions 26. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Watanabe et al. by forming a first conductivity type doped region in at least one of the plurality of well regions for the purpose of providing an improved resistance characteristic in a FET device as taught by Eklund (col. 2, lines 25-28).

Regarding claim 18, Watanabe et al. discloses on figure 8 the step of forming the plurality of drain regions comprises the steps of forming a plurality of well regions 19, 23 in the body of semiconductor material, and forming a drain contact region 24 in at least one of the plurality of well regions.

Regarding claim 20, Watanabe et al. discloses on figure 8 the steps of forming the second conductive layer 30 includes forming a second conductive layer 30 wherein portions of the second conductive layer terminate in proximity to the first conductive layer.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. and Eklund as applied to claim 1 above, and further in view of Ludikhuize.

Regarding claim 5, Watanabe et al. and Eklund disclose substantially all the structure set forth in the claimed invention except the first drain region comprising an elongated stripe shape. However, Ludikhuize discloses on figure 1 except the first drain region 7 comprising an elongated stripe shape. In view of such teaching, it would have

been obvious to one of ordinary skill in the art at the time the invention was made to modify Watanabe et al. and Eklund by having the first drain region comprising an elongated stripe shape for the purpose of increasing the breakdown voltage at high currents, and thus an expansion of the safe operating area as taught by Ludikhuize (col. 2, lines 2-4).

Regarding claim 6, Watanabe et al. and Eklund disclose substantially all the structure set forth in the claimed invention except the first source region comprising an elongated stripe shape substantially parallel to the first drain region. However, Ludikhuize discloses on figure 1 the first source region 6 comprising an elongated stripe shape substantially parallel to the first drain region 7. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Watanabe et al. and Eklund by having the first source region comprising an elongated stripe shape substantially parallel to the first drain region for the purpose of increasing the breakdown voltage at high currents, and thus an expansion of the safe operating area as taught by Ludikhuize (col. 2, lines 2-4).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for

the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

JN
March 31, 2005

GEORGE ECKERT
PRIMARY EXAMINER